CLAIMS:

1. A non-human animal, in which the gene encoding the MSH4 gene is misexpressed.

2. The animal of claim 1, wherein said animal is a transgenic animal.

3. The animal of claim 2, wherein said transgenic animal is a mouse.

4. The animal of claim 1, wherein the MSH4 gene is disrupted by removal of DNA encoding all or part of the MSH4 protein.

5. The animal of claim 4, wherein said animal is homozygous for the disrupted gene.

6. The animal of claim 4, wherein said animal is heterozygous for the disrupted gene.

7. The animal of claim 1, wherein said animal is a transgenic mouse with a transgenic disruption of the MSH4 gene.

8. The animal of claim 7, wherein said disruption is an insertion or deletion.

9. A method for identifying a compound that modulates the interaction between MSH4 and MSH5, comprising contacting MSH4 with said compound and determining the ability of said compound to modulate the interaction between MSH4 and MSH5.

10. The method of claim 9, wherein said compound inhibits the interaction between MSH4 and MSH5.

11. A method for identifying a contraceptive compound, comprising contacting MSH4 with a test compound and determining the ability of said test compound to inhibit the interaction between MSH4 and MSH5, thereby identifying a contraceptive compound.

12. The method of claim 11, wherein MSH4 is contacted directly with a test compound.

13. The method of claim 11, wherein MSH4 is contacted indirectly with a test compound.

14. A method for effecting contraception in a subject comprising administering to the subject a compound that inhibits the interaction between MSH4 and MSH5.

15. A method for modulating meiotic recombination in a cell comprising contacting the cell with a compound that modulates the interaction between MSH4 and MSH5.

16. A method of evaluating a fertility treatment, comprising:

administering said treatment to an MSH4 misexpressing animal or a cell therefrom and determining the effect of the treatment on a fertility indication, thereby evaluating said fertility treatment.

17. The method of claim 16, wherein said treatment is evaluated *in vivo*.

18. The method of claim 16, wherein said treatment is evaluated *in vitro*.

19. The method of claim 16, wherein said MSH4 misexpressing animal is a transgenic mouse.

20. A method for identifying a compound which modulates the activity of MSH4, comprising:

a) contacting MSH4 with a test compound; and

b) determining the effect of the test compound on the activity of MSH4 to, thereby, identify a compound which modulates MSH4 activity.

21. The method of claim 20, wherein the activity of MSH4 is inhibited.

22. A method for modulating the activity of MSH4 comprising contacting MSH4 or a cell expressing MSH4 with a compound which binds to MSH4 in a sufficient concentration to modulate the activity of MSH4.

23. The method of claim 22, wherein the activity of MSH4 is inhibited.

24. The method of claim 23, wherein said method is used in contraception.

25. A method of identifying a subject having or at risk of developing a fertility disease or disorder, comprising:

(a) obtaining a sample from said subject;

(b) contacting said sample with a nucleic acid probe or primer which selectively hybridizes to MSH4; and

(c) determining whether aberrant MSH4 nucleic acid expression or MSH4 protein activity exists in said sample, thereby, identifying a subject having or at risk of developing a fertility disease or disorder.

26. An isolated cell, or a purified preparation of cells from an MSH4 misexpressing animal.

27. The cell of claim 26, wherein said cell is transgenic cell.

28. The cell of claim 27, wherein said transgenic cell is a mouse cell.